

## 个人简介

**王天云**，男，博士，博士生导师，二级教授。河南省杰出专业技术人才、河南省优秀专家、中原科技创新领军人才、河南省科技创新杰出人才、河南省高层次人才、新乡医学院“太行学者”特聘教授、河南省国际联合实验室及工程技术研究中心主任、中国生物化学与分子生物学会理事、河南省生物化学与分子生物学会理事长。“长江学者”、国家科技进步奖评审专家。长期从事基因工程药物研究，建立了国际领先水平的哺乳细胞表达系统用于重组药物蛋白生产，包括高效表达载体、细胞系及培养基。主持完成国家自然科学基金项目 4 项、河南省重大科技专项 1 项、中原科技创新领军人才项目 1 项、省创新杰出人才项目 1 项、其他省级科研课题 6 项；获河南省科技进步二等奖 2 项、三等奖 2 项；出版专著 2 部，申请国家发明专利 35 项，已授权 18 项。发表研究论文 146 篇，其中 SCI 收录 86 篇，H 指数 16，被引 1511 次，已实现成果转化 8 项。

## 研究方向

- ✓ 基因工程药物，哺乳动物细胞表达系统

## 招生方向

- ✓ 学术学位硕士（学硕）：药理学（微生物与生化药学：基因工程药物）
- ✓ 专业学位硕士（专硕）：药物研发与转化

## 承担项目

- ✓ 中原英才计划“中原科技创新领军人才”项目，重组蛋白药物高效同质哺乳动物细胞表达系统的构建及分子机制，2023-01 至 2024-12，80 万元，在研，主持
- ✓ 国家自然科学基金委员会，面上项目，81673337，基于 MAR 的新型 CHO 细胞表达系统优化及机制，2017-01 至 2020-12，50 万元，已结题，主持
- ✓ 河南省科技厅，科技创新人才计划项目，164200510003，用于重组蛋白生产含 MAR 高效载体分子组装优化及其调控机制，2016-01 至 2018-12，50 万元，已结题，主持
- ✓ 国家自然科学基金委员会，面上项目，31371332，核基质附着区调控哺乳动物细胞表达系统转基因表达的特性及其机制，2014-01 至 2014-12，15 万元，已结题，主持
- ✓ 国家自然科学基金委员会，面上项目，30970055，筛选盐藻 MBP 相互作用蛋白及功能研究，2009-01 至 2012-12，30 万元，已结题，主持
- ✓ 河南省重大科技专项，191110311500，重组药物蛋白关键技术及配套生物产品的研发，2019.07-2021.07，200 万元，已结题，主持
- ✓ 河南省创新型科技团队，CXTD2015022，河南省重组药物蛋白哺乳表达系统的建立创新型科技团队，2015.09-2017.09，50 万元，已结题，主持

- ✓ Li ZM, Fan ZL, Wang XY, **Wang TY\***. Factors Affecting the Expression of Recombinant Protein and Improvement Strategies in Chinese Hamster Ovary Cells. *Front Bioeng Biotechnol*, 2022, 10:880155.
- ✓ Yang Y, Li Z, Li Q, Ma K, Lin Y, Feng H, **Wang T\***. Increase recombinant antibody yields through optimizing vector design and production process in CHO cells. *Appl Microbiol Biotechnol*, 2022, 106(13-16):4963-4975.
- ✓ Yang W, Zhang J, Xiao Y, Li W, **Wang T\***. Screening Strategies for High-Yield Chinese Hamster Ovary Cell Clones. *Front Bioeng Biotechnol*, 2022, 10:858478.
- ✓ Xu T, Zhang J, **Wang T\***, Wang X. Recombinant antibodies aggregation and overcoming strategies in CHO cells. *Appl Microbiol Biotechnol*, 2022, 106(11):3913-3922.
- ✓ Wei M, Mi CL, Jing CQ, **Wang TY\***. Progress of Transposon Vector System for Production of Recombinant Therapeutic Proteins in Mammalian Cells. *Front Bioeng Biotechnol*, 2022, 10:879222.
- ✓ Liu HN, Dong WH, Lin Y, Zhang ZH, **Wang TY\***. The Effect of microRNA on the Production of Recombinant Protein in CHO Cells and its Mechanism. *Front Bioeng Biotechnol*, 2022, 10:832065.
- ✓ Wei-Feng Li, Zhen-Lin Fan, Xiao-Yin Wang, Yan Lin, **Tian-Yun Wang\***. Combination of sodium butyrate and decitabine promotes transgene expression in CHO cells via apoptosis inhibition. *N Biotechnol*, 2022 Feb 23; 69:8-17.
- ✓ Li Q, Yan RF, Yang YX, Mi CL, Jia YL, **Wang TY\***. Stabilizing and Anti-Repressor Elements Effectively Increases Transgene Expression in Transfected CHO Cells. *Front Bioeng Biotechnol*, 2022, 10:840600.
- ✓ Ma Y, Li W, Ma K, **Wang T\***, Feng H. Cell Surface Markers and Their Targeted Drugs in Breast Cancer. *Curr Protein Pept Sci*. 2022. doi: 10.2174/1389203723666220530102720.
- ✓ Mi C, Cao X, Ma K, Wei M, Xu W, Lin Y, Zhang J, **Wang TY\***. Digitoxin promotes apoptosis and inhibits proliferation and migration by reducing HIF-1 $\alpha$  and STAT3 in KRAS mutant human colon cancer cells. *Chem Biol Interact*, 2022, 351:109729.
- ✓ Miao X, Wang F, **Wang T\***, Razak SRA, Yunus MA, Ismail IS. Research updates on the clinical implication of long noncoding RNA in digestive system cancers and chemoresistance. *3 Biotech*, 2021, 11(9):423.
- ✓ Dong W, Wang F, Liu Q, **Wang T\***, Yang Y, Guo P, Li X, Wei B. Downregulation of miRNA-14669 Reverses Vincristine Resistance in Colorectal Cancer Cells through PI3K/AKT Signaling Pathway. *Recent Pat Anticancer Drug Discov*, 2022, 17(2):178-186.
- ✓ Xiao-Yin Wang, Qiu-Jie Du, Wei-Li Zhang, Dan-Hua Xu, Xi Zhang, Yan-Long Jia, **Tian-Yun Wang\***. Enhanced Transgene Expression by Optimization of Poly A in Transfected CHO Cells. *Front Bioeng Biotechnol*, 2022 Jan 24;10:722722.

- ✓ Ma K, Mi CL, Cao XX, **Wang TY\***. Progress of cationic gene delivery reagents for non-viral vector. *Appl Microbiol Biotechnol*, 2021, 105(2):525-538.
- ✓ Li W, Fan Z, Lin Y, **Wang TY**. Serum-Free Medium for Recombinant Protein Expression in Chinese Hamster Ovary Cells. *Front Bioeng Biotechnol*, 2021, 9:646363.
- ✓ Zhang HY, Fan ZL, **Wang TY**. Advances of Glycometabolism Engineering in Chinese Hamster Ovary Cells. *Front Bioeng Biotechnol*, 2021, 9:774175.
- ✓ Dou Y, Lin Y, **Wang TY**, Wang XY, Jia YL, Zhao CP. The CAG promoter maintains high-level transgene expression in HEK293 cells. *FEBS Open Bio*, 2021, 11(1):95-104.
- ✓ Dan-Dan Yi, Xiao-Yin Wang, Wei-Li Zhang, Meng Wang, Jun-He Zhang, **Tian-Yun Wang\***. Construction of an expression vector mediated by the dual promoter for prokaryotic and mammalian cell expression system. *Mol Biol Rep*, 2020, 47(7):5185-5190.
- ✓ Jun-He Zhang, Ji-Hong Zhang, Xiao-Yin Wang, Dan-Hua Xu, **Tian-Yun Wang\***. Distance effect characteristic of the matrix attachment region increases recombinant protein expression in Chinese hamster ovary cells. *Biotechnol Lett*, 2020, 42(2):187-196.
- ✓ Yan-Mei Li, Meng Wang, **Tian-Yun Wang\***, Yong-Ge Wei, Xiao Guo, Chun-Liu Mi, Chun-Peng Zhao, Xiang-Xiang Cao, Yuan-Yuan Dou. Effects of different 2A peptides on transgene expression mediated by tricistronic vectors in transfected CHO cells. *Mol Biol Rep*, 2020, 47(1):469-475.
- ✓ Xiao-Yin Wang, Xi Zhang, **Tian-Yun Wang\***, Yan-Long Jia, Dan-Hua Xu, Dan-Dan Yi. Shortened nuclear matrix attachment regions are sufficient for replication and maintenance of episomes in mammalian cells. *Mol Biol Cell*, 2019, 30(22):2761-2770.
- ✓ Yan-Long Jia, Xiao Guo, Tian-Jun Ni, Jiang-Tao Lu, Xiao-Yin Wang, **Tian-Yun Wang\***. Novel short synthetic matrix attachment region for enhancing transgenic expression in recombinant Chinese hamster ovary cells. *J Cell Biochem*, 2019, 120(10):18478-18486.
- ✓ Jian-Hui Gao, **Tian-Yun Wang\***, Mao-Ying Zhang, Fang Shi, Shan-Zhi Gu. Identification of consensus sequence from matrix attachment regions and functional analysis of its activity in stably transfected Chinese hamster ovary cells. *J Cell Biochem*, 2019, 120(8):13985-13993.
- ✓ Xiao-Yin Wang, Dan-Dan Yi, **Tian-Yun Wang\***, Yan-Fang Wu, Yu-Rong Chai, Dan-Hua Xu, Chun-Peng Zhao, Chao Song. Enhancing expression level and stability of transgene mediated by episomal vector via buffering DNA methyltransferase in transfected CHO cells. *J Cell Biochem*, 2019, 120(9):15661-15670.
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- ✓ Qin Li, Chun-Peng Zhao, Yan Lin, Chao Song, Fang Wang, **Tian-Yun Wang\***. Two human MARs effectively increase transgene expression in transfected CHO cells. *J Cell Mol Med*, 2019, 23(2):1613-1616.

- ✓ Yan-Mei Li, Zheng-Wei Tian, Dan-Hua Xu, Xiao-Yin Wang, **Tian-Yun Wang\***. Construction strategies for developing expression vectors for recombinant monoclonal antibody production in CHO cells. *Mol Biol Rep*, 2018, 45(6):2907-2912.
- ✓ Wen Wang, Xiao Guo, Yan-Mei Li, Xiao-Yin Wang, Xian-Jun Yang, Yan-Fang Wang, **Tian-Yun Wang\***. Enhanced transgene expression using cis-acting elements combined with the EF1 promoter in a mammalian expression system. *Eur J Pharm Sci*, 2018, 123:539-545.
- ✓ Yan-Long Jia, Xiao Guo, Jiang-Tao Lu, Xiao-Yin Wang, Le-Le Qiu, **Tian-Yun Wang\***. CRISPR/Cas9-mediated gene knockout for DNA methyltransferase Dnmt3a in CHO cells displays enhanced transgenic expression and long-term stability. *J Cell Mol Med*, 2018, 22(9):4106-4116.
- ✓ Yu-Rong Chai, Meng-Meng Ge, Ting-Ting Wei, Yan-Long Jia, Xiao Guo, **Tian-Yun Wang\***. Human rhinovirus internal ribosome entry site element enhances transgene expression in transfected CHO-S cells. *Sci Rep*, 2018, 8(1):6661. Dan-Hua Xu, Xiao-Yin Wang, Yan-Long Jia, **Tian-Yun Wang\***, Zheng-Wei Tian, Xin Feng, Yin-Na Zhang. SV40 intron, a potent strong intron element that effectively increases transgene expression in transfected Chinese hamster ovary cells. *J Cell Mol Med*, 2018, 22(4):2231-2239.
- ✓ Si-Jia Chen, Wen Wang, Feng-Yi Zhang, Yan-Long Jia, Xiao-Yin Wang, Xiao Guo, Shao-Nan Chen, Jian-Hui Gao, **Tian-Yun Wang\***. A chimeric HS4 insulator-scaffold attachment region enhances transgene expression in transfected Chinese hamster ovary cells. *FEBS Open Bio*, 2017, 7(12):2021-2030.
- ✓ Zheng-Wei Tian, Dan-Hua Xu, **Tian-Yun Wang\***, Xiao-Yin Wang, Hong-Yan Xu, Chun-Peng Zhao, Guang-Hua Xu. Identification of a potent MAR element from the human genome and assessment of its activity in stably transfected CHO cells. *J Cell Mol Med*, 2018, 22(2):1095-1102.
- ✓ 张淼, 杨露露, 贾岩龙, **王天云\***. DNA 甲基化和组蛋白甲基化修饰的表观遗传调控作用研究进展. *生物技术通报*, 2022, 38(07):23-30.
- ✓ 窦媛媛, 林艳, 高向征, 王燕芳, 王小引, **王天云\***. 重组人 bFGF 的原核表达及功能分析. *中国细胞生物学学报*, 2019, 4(7):1365-1370.
- ✓ 王稳, **王天云\***. CHO 细胞表达系统启动子. *中国生物化学与分子生物学报*, 2019, 35(11):1175-1182.
- ✓ 李琴, **王天云\***, 王小引, 郭潇, 林艳. 用于重组药物蛋白生产的人源化细胞系研究进展. *中国免疫学杂志*, 2018, 34(8):1274-1277, 封 3.
- ✓ 李艳梅, 田政伟, 徐丹华, 王稳, 王小引, 张贵虎, **王天云\***. CHO 细胞重组抗体表达载体的构建策略及进展. *中国细胞生物学学报*, 2018, 40(11):1958-1964.
- ✓ 专著: **王天云**, 贾岩龙, 王小引, 王芳, 王蒙, 米春柳, 张俊河, 林艳, 赵春澎, 姚朝阳, 倪天军, 郭潇, 哺乳动物细胞重组蛋白工程, 化学工业出版社, 2020.09
- ✓ 专著: **王天云**, 张俊河, 林艳, 米春柳, 赵春澎, 郭潇, 董卫华, 樊振林, 动物细胞培养及培养基制备, 化学工业出版社, 2021.09

## 已授权发明专利

- ✓ **王天云**, 贾岩龙, 倪天军, 赵春澎, 徐红彦, 王喜成, 陈思佳, 郭潇.一种三顺反子表达载体、制备方法及应用.中国, 专利号: ZL201610272518.X, 授权日: 2020.02.18
- ✓ 王小引, **王天云**, 杜爱玲, 贾岩龙, 赵春澎, 张俊河, 张玺, 高向征, 白可可, 孙彩霞. 一种人类及哺乳动物细胞附着体表达载体、构建方法和应用.中国, 专利号: ZL201610270090.5, 授权日: 2020.07.10
- ✓ 董卫华, **王天云**, 张俊河, 高建辉, 姚朝阳, 倪天军.用于检测与结直肠癌长春新碱相关的 miRNA 表达的引物、试剂盒、方法及应用.中国, 专利号: ZL201710129192.X, 授权日: 2020.01.24
- ✓ **王天云**, 林艳, 井长勤, 李琴, 王建华, 郭梦龙.一种适合 HEK293 细胞的双顺反子表达载体及其制备方法、表达系统、应用.中国, 专利号: ZL201710240457.3, 授权日: 2019.09.06
- ✓ 王小引, **王天云**, 张玺, 王俐, 李琴, 王芳, 张俊河, 林艳.一种人类和其他哺乳动物细胞附着体表达载体、表达系统、制备方法和应用.中国, 专利号: ZL201611019369.2, 授权日: 2019.05.17
- ✓ 贾岩龙, 郭潇, **王天云**, 王稳, 王燕芳, 陈思佳, 田政伟, 徐丹华.哺乳动物细胞表达载体、表达系统、制备方法和应用.中国, 专利号: ZL201611109050.9, 授权日: 2019.05.17
- ✓ 赵春澎, **王天云**, 王小引, 张玺, 徐光华, 付笑笑, 高向征.一种基于 cHS4 元件的哺乳动物细胞附着体表达载体、表达系统、制备方法和应用.中国, 专利号: ZL201611111154.3, 授权日: 2019.04.09
- ✓ **王天云**, 贾岩龙, 张俊河, 赵春澎, 李琴, 王小引.附着型慢病毒载体、制备方法及应用.中国, 专利号: ZL201510534187.8, 授权日: 2019.01.18

## 成果奖励

- ✓ 河南省科学技术进步二等奖: 王天云(1/10); 重组蛋白含 MAR 高效载体分子组装优化及其应用, 河南省人民政府科技进步, 省部二等奖, 2020 (**王天云**; 贾岩龙; 倪天军; 郭潇; 王小引; 林艳; 董卫华; 潘若文; 马超援; 蒋涛华).
- ✓ 河南省科学技术进步二等奖: 王天云(1/7); 核基质附着区的克隆及在稳定转化 CHO 细胞中对转基因表达的作用及其机制, 河南省人民政府, 科技进步, 省部二等奖, 2010 (**王天云**; 孟勇; 王俐; 张俊河; 井长勤; 李延兰; 王芳).